



09/21/00

## UTILITY PATENT APPLICATION TRANSMITTAL UNDER 37 C.F.R. §1.53(b)

 JC715 U.S.P.T.O.  
 09/665941 P1  
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ASSISTANT COMMISSIONER FOR PATENTS  
 Box PATENT APPLICATION  
 Washington D.C. 20231  
 Sir:

Case Docket No.: P-124

Transmitted herewith for filing is the patent application of  
 INVENTOR OR APPLICATION IDENTIFIER: Sung Bae JUN and Kyoung Ro YOON  
 FOR: MULTIPLE ITEM USER PREFERENCE INFORMATION DATA STRUCTURE AND METHOD FOR  
 PROVIDING MULTI-MEDIA INFORMATION

Enclosed are:

1. [X] 15 pages of specification, claims, abstract  
 2. [X] 3 sheets of FORMAL drawing.  
 3. [X] 2 pages of newly executed Declaration & Power of Attorney (fax original).  
 4. [X] Priority Claimed to Korean Appln. No. 41192/1999, whose entire disclosure is incorporated herein by reference.  
 5. [ ] Small Entity Statement.  
 6. [ ] Information Disclosure Statement, Form PTO-1449 and reference.  
 10. [X] Authorization under 37 C.F.R. §1.136(a)(3).  
 11. [X] Other: Preliminary Amendment

CLAIMS AS FILED					
For	No. Filed		No. Extra	Rate	Fee
Total Claims	13	- 20	0	X \$18.00	\$0.00
Indep. Claims	2	- 3	0	X \$78.00	\$0.00
Multiple Dependent Claims (If applicable)				X \$260.00	\$0.00
				BASIC FEE	\$690.00
				TOTAL FILING FEE	\$690.00

[ ] This is a Continuation-in-part (CIP) of prior application No: \_\_\_\_\_ filed \_\_\_\_\_. Incorporation By Reference-The entire disclosure of the prior application is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.

[ ] Amend the specification by inserting before the first line the sentence:

-This application is a continuation-in-part of Application Serial No. \_\_\_\_\_ filed \_\_\_\_\_.-

[X] A check in the amount of \$690.00 (Check #9427) is attached.

[ ] Please charge my Deposit Account No. 16-0607 in the amount of \$\_\_. A duplicate copy of this sheet is enclosed.

[X] The Commissioner is hereby authorized to charge payment of the following fees associated with this communication or credit any overpayment to Deposit Account No. 16-0607. A duplicate copy is enclosed.

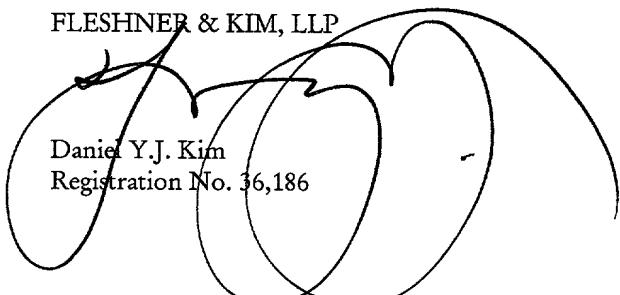
[X] Any additional filing fees required under 37 C.F.R. 1.16.

[X] The Commissioner is hereby authorized to charge payment of following fees during the pendency of this application or credit any overpayment to Deposit Account No. 16-0607. A duplicate copy of this sheet is enclosed.

[X] Any patent application processing fees under 37 C.F.R. 1.17.

[X] Any filing fees under 37 C.F.R. 1.16 for presentation of extra claims.

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Docket No.: P-124

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of :  
Sung Bae JUN and Kyoung Ro YOON :  
Serial No. New U.S. Patent Application :  
Filed: September 21, 2000 :  
For: MULTIPLE ITEM USER PREFERENCE INFORMATION DATA  
STRUCTURE AND METHOD FOR PROVIDING MULTI-MEDIA  
INFORMATION

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents  
Washington, D. C. 20231

Sir:

Prior to initial examination on the merits, please amend the above-identified application as follows:

IN THE CLAIMS:

Please amend claim 4 as follows:

Claim 4, line 1, delete "or 3".

REMARKS

Claims 1-13 are pending. Claim 4 has been amended to eliminate the multiple dependency. Prompt examination and allowance in due course are respectfully solicited.

Respectfully submitted,  
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MULTIPLE ITEM USER PREFERENCE INFORMATION DATA STRUCTURE AND  
METHOD FOR PROVIDING MULTI-MEDIA INFORMATION

BACKGROUND OF THE INVENTION

5

1. Field of the Invention

The present invention relates to a user preference information data structure and a method for providing whole or partial multi-media content using the user preference information data structure, and more particularly, to a user preference information data structure which is capable of classifying and setting user's preference information regarding multimedia contents with multiple items to thereby provide users with user request-based whole or partial multi-media information, and a method for providing multi-media information by using the user preference information data structure.

15

2. Description of the Background Art

Recently, as a digital video technique and an image/video recognition technique are developed, information users can easily search a video contents or a specific segments of the video content as desired.

20 That is, users easily understand the whole content of a video stream within a short time by searching only a summary version generated according to user's desire, rather than viewing the whole content recorded in the video stream

For this purpose, researches are being conducted for searching information desired by the user more easily, for which a content-based information 25 is described to the whole or the partial segments of the multi-media stream so that

the user can easily search desired information using the content-based data.

The content-based data may include a producer, a director, an actor in the whole multi-media stream or may include information related to appearance or disappearance of things in a video scene, information on when things happen, 5 interval information of the stream such as a relationship between a character and happenings.

Accordingly, when the content-based data is described for the multi-media stream, the user may select a desired multi-media stream, or easily searches only a desired portion (or a segment) of the multi-media stream.

10 The method using the content-based data will now be described.

In order to satisfy the user's request that "show me only the scene in which a main actor is closed up in the movie *Titanic*", the video browsing system can display only the desired scene to the user on the basis of the previously described content-based data regarding the multimedia content.

15 U.S. Patent No. 5,913,013 discloses a method in which a level is set for a violent scene, a nude scene or a portion of appearance of an actor in a multi-media stream and a code is given for segments, to thereby construct a content map. With this method, the user can easily search a desired portion on the basis of the content map.

20 However, the method for providing multi-media contents or parts of contents using the content map has a problem that whenever the user wants his or her desired information, the searching condition should be described by the user.

25 In order to solve the problem, most systems adopts a method that automatically recommend programs or segments of programs by combining a

content map with a use user preference information.

The user preference information is stored in a non-volatile memory of a terminal device of the user or a server or in a portable non-volatile memory such as a smart card. The user preference information can be automatically learned 5 from the usage history of the user.

In this manner, on the basis of the usage history user preference information can be updated or the user can directly edit his or her user preference information to obtain his or her desired information automatically, thereby expressing a user preference/non-preference.

10 The user preference/non-preference includes a genre of information such as a melodrama, an action movie, a horror movie, politics, news, economic news, soccer, etc, or general information items related to multi-media content such as producer(s), production date, director(s), characters, a degree of special effects, etc.

15 The user conventional preference information data structure may indicate preference or non-preference for each item (i.e., a genre of information, a producer, a production date or a director, etc.), and as shown in Figure 1, it is general to have a preference level (or a value) for each item.

The conventional user preference information data structure can be 20 represented as follows

Pref = {(l,v) : l denotes a preference item  
v is user's preference value related to item l}

Figure 1 is a table expressing user preference information in accordance with a conventional art, in which preference/non-preference level is differently set 25 for a single item field (i.e., each director, each genre or each actor, etc.) and each

item.

Figure 2 illustrates a construction of a user preference information data structure in accordance with a conventional art. The user preference information 100 includes a plurality (0, 1, ..., n) of item user preference information 110. The 5 sub-tree of the user preference information 110 includes a preference item identifier 111 for searching multi-media information or a partial portion of the multi-media information and an item preference/non-preference level 112.

The item user preference information 110 may be formed by items of a similar category, for example, a group (or a set) of preference items by genres or 10 actors. The group (or the set) may be designed to have one-dimensional structure or a hierarchical structure .

The preference item identifier 111 includes items such as a producer, a director or an actor of the multi-media information. The item preference/non-preference level (or a value) 112 indicates the degree of preference for the 15 preference items.

In this manner, the method recommends or provides a multi-media stream or a portion of the multi-media stream (a segment or a still image) fitting the user's taste by automatically filtering multi-media stream or its segment according to the user's preference.

20 However, generally, as a data format in very diverse types, and further, the content of the multi-media information also includes various genres, there are great number of items to describe the user preference information.

Accordingly, the conventional user preference information data structure formed merely with the single item and a corresponding user preference/non-preference level. But, multi-media information providing method by using the data 25

structure of the conventional art is unsatisfactory in the aspect that since the information desired by the user is expressed merely by the single item and its corresponding preference item level, it can not fully express the user preference.

For example, in case where the user has a high preference level for each 5 of preference item 'A' and 'B' while he or she does not prefer the content that 'A' and 'B' appear together at the same time, the user preference expressing method for the single item in accordance with the conventional art fails to fully express the user preference.

## 10 SUMMARY OF THE INVENTION

Therefore, an object of the present invention is to provide a data structure for describing multiple item user preference information data structure which is capable of classifying and setting user's preference information regarding 15 multimedia content with multiple items to thereby provide users with user request-based whole or partial multi-media information, and a method for providing multi-media information by using the user preference information data structure.

To achieve these and other advantages and in accordance with the purpose of the present invention, as embodied and broadly described herein, 20 there is provided a multiple item user preference information data structure for multi-media contents provided from an information provider to an information user, including single item user preference information for single items related to the multi-media contents; and multiple items user preference information for multiple items formed by combining the multiple items and assigning single preference 25 value(level).

In order to achieve the above object, there is also provided a method for providing multi-media information using the multiple item user preference information data structure to provide a multi-media contents desired by users, including the steps of: setting user preference information for the multi-media contents; searching the multi-media contents according to the user preference information; and providing users with multi-media contents according to the searching result.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this specification, illustrate embodiments of the invention and together with the description serve to explain the principles of the invention.

In the drawings:

Figure 1 is a table expressing user preference information in accordance with a conventional art;

Figure 2 illustrates a construction of a user preference information data structure in accordance with a conventional art;

Figure 3 illustrates a construction of a user preference information data structure in accordance with the present invention; and

Figure 4 is a table expressing user preference information in accordance with the present invention.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Reference will now be made in detail to the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings.

In order to filter and search multi-media contents, the presented data structure for describing user's preference information permits assigning single preference value(level) to the combinations of multiple user preference items, so as to provide the data structure for describing the user preference level for the multiple items and the method for providing the multi-media information by using the data structure.

The presented user preference information data structure can be represented as follows

$\text{Pref} = \{(L, v) : \begin{array}{l} L \text{ denotes the list of single preference items} \\ v \text{ is user's preference value for combinations} \\ \text{of preference items in list } L \end{array}\}$

Figure 3 illustrates a construction of a user preference information data structure in accordance with the present invention.

As shown in the drawing, a sub-tree of the user preference information 200 includes a plurality (0, 1, ..., n) of single item user preference information 210 and a plurality (0, 1, ..., n) of multiple items user preference information 220. A sub-tree of the single item user preference information 210 includes a user preference item identifier 211 and an item user preference 212 corresponding to the user preference item identifier. A sub-tree of the multiple items user preference information 220 includes a plurality (2, 3, ..., n) of multiple items identifiers 221 and an item user preference level 222 corresponding to the multiple items identifier.

In this respect, in the sub-trees of the single item user preference information 210 and the multiple items user preference information 220, items in the similar condition form a group (or a set), which will now be described in detail with reference to Figure 4.

5 Figure 4 is a table expressing user preference information in accordance with the present invention, which includes a user preference item identifier field indicating single items and multiple items and a user preference/non-preference level field indicating the degree of the user preference for each item.

10 The single items are divided into single item identifiers and its user preference levels such as a director 'A'. The multiple items are divided into several multiple items consisting of a direction 'A', a director 'B', a genre 'A' and a genre 'B' (i.e., the director 'A' and the genre 'A', the director 'A', the genre 'B', the director 'B' and the genre 'A' and the director 'B' and the genre 'B') and its user preference level.

15 Meanwhile, likewise in the conventional art, the user preference information may be changed using a user's access pattern or explicitly edited by the user.

20 That is, the user can give different weight value for the single items and the multiple items, so that user preference information suiting the user's taste can be set and thus more accurate information can be obtained.

25 Generally, the user preference information data structure which permits multiple items preference is able to provide more accurate information to users than the user preference permits only the single item preference. Therefore, the user preference data structure of present invention can produce more precise result than that of conventional art. and the multimedia information or a portion of

the multi-media information provided according to the user preference.

Therefore, by taking the method for providing multi-media information by using the data structure including the multiple items, users can receive more accurate information of desired contents automatically.

5 With reference to Figure 4, the merit of the user preference information including the multiple items will now be described in detail.

As shown in the drawing, it is noted that the user has a tendency (indicated by 'H2') to prefer a movie directed by a director 'B', a movie belonging to a genre 'B' and a movie in which an actor 'A' plays, and has a tendency (indicated by 'H1')  
10 'not to prefer a movie directed by a director 'A', a movie belonging to a genre 'A' and a movie in which an actor 'B'.

If the user preference information is expressed only with the single item for the user preference/non-preference according to the conventional art, it is inferred that the user would prefer a movie (indicated by 'H4') that belongs to the genre 'B'  
15 and the actor 'A' plays to a movie (indicated by 'H3') that belongs to the genre 'B' and the actor 'B' plays. But it may not be true.

That is, as shown in Figure 4, in case that the user preference information is expressed by using the multiple items and its corresponding user preference/non-preference level, it is resulted in that the user prefers the movie  
20 (P2 = H3) that belongs to the genre 'B' and the actor 'B' plays to the movie (P1 = H4) that belongs to the genre 'B' and the actor 'A' plays.

Consequently, the user preference information can be more accurately recommended or provided by using the multiple items.

Though the multiple items are increased in number as the number of the  
25 single item is increased, since only the substantially critical multiple items or

multiple items desired by the user are stored, and when the single items are combined to generate multiple items, some multiple items that could be hardly combined are excluded from storing, so that the memory of the system can be effectively managed.

5 Also, by allocating a weight value for the single items and the multiple items, the multi-media information desired by the user can be rapidly filtered and searched according to the order of priority.

As so far described, according to the multiple item user preference information data structure of a user profile and the multi-media contents 10 filtering/searching method using the data structure of the present invention, user preference items are divided into the single items and multiple items consisting of the combination of the single items, and the user preference/non-preference information is described for the single items and for the multiple items, so that more accurate multi-media information suiting the user's taste can be used for 15 recommending or providing to the information user.

As the present invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, it should also be understood that the above-described embodiments are not limited by any of the details of the foregoing description, unless otherwise specified, but rather should 20 be construed broadly within its spirit and scope as defined in the appended claims, and therefore all changes and modifications that fall within the meets and bounds of the claims, or equivalence of such meets and bounds are therefore intended to be embraced by the appended claims.

What is claimed is:

1. A multiple item user preference information data structure for multi-media information provided from an information provider comprising:

5 single item user preference information for single items related to the multi-media information; and

multiple items user preference information for multiple items formed by combining the single items.

10 2. The data structure according to claim 1, wherein the single item user preference information comprising:

a user preference item identifier which denotes the item to describe user's preference; and

an item preference level indicating the degree of user preference,

15 corresponding to the user preference to the user preference item identifier.

3. The data structure according to claim 1, wherein the multiple item user preference information comprising:

a user preference item identifier which is combination of single user 20 preference items; and

an item preference level indicating the degree of user preference, corresponding to the user preference to combinations of the user preference item identifiers.

25 4. The data structure according to claim 2 or 3, wherein the item

preference level is one of levels divided into a plurality of levels between levels preferred by a user and levels not preferred by the user.

5. The data structure according to claim 1, wherein the single item  
5 user preference information and the multiple items user preference information are  
stored in non-volatile memory of a system installed for an information provider  
and/or an information user.

6. The data structure according to claim 1, wherein the single item  
10 user preference information and the multiple items user preference information are  
stored in portable non-volatile memory such as smart card.

7. A method for providing multi-media information in which a multi-media is provided from the information provider to users in a user's desired  
15 environment, comprising the steps of:  
setting user preference information for the multi-media information;  
searching the multi-media information according to the user preference  
information; and  
providing users with generated multi-media information according to the  
20 searching result.

8. The method according to claim 7, wherein the user preference information comprising:  
single item user preference information for single items related to the  
25 multi-media information; and

multiple items user preference information for multiple items formed by combining the single items.

9. The method according to claim 8, wherein the single item user preference information comprising:

a user preference item identifier which denotes the item to describe user's preference; and

an item preference level indicating the degree of user preference, corresponding to the user preference to the user preference item identifier.

10. The method according to claim 8, wherein the multiple items user preference information comprising:

a user preference item identifier which is combinations of single user preference items; and

an item preference level indicating the degree of user preference, corresponding to the user preference to combinations of the user preference item identifiers.

11. The method according to claim 8, wherein in the step of searching multi-media information, in case that there exist a single item and a multiple items together, a weight value is applied to each of the single item and the multiple items and the multi-media information is searched depending on the order of priority according to their weight value.

12. The method according to claim 8, wherein the user preference

information is recorded in non-volatile memory of a system installed for the information provider or an information user.

13. The method according to claim 8, wherein the user preference information is recorded in a memory of a system installed in portable non-volatile memory such as smart card.

## ABSTRACT OF THE DISCLOSURE

A user preference information data structure which is capable of classifying and setting user's preference information regarding multimedia contents with multiple items to thereby provide users with user's request-based whole or partial multi-media information, and a method for providing multi-media information by using the user preference information data structure. The multiple item user preference information data structure for multi-media contents comprising: single item user preference information for single items related to the multi-media information; and multiple items user preference information for multiple items formed by combining the single items.

FIG. 1  
CONVENTIONAL ART

ITEM IDENTIFIERS	PREFERENCE/NON-PREFERENCE LEVEL								
	NON-PREFERENCE				PREFERENCE				
	-4	-3	-2	-1	0	1	2	3	4
DIRECTOR A		■							
DIRECTOR B								■	
DIRECTOR C							■		
GENRE A									■
GENRE B						■			
GENRE C	■								
GENRE D					■				
ACTOR A								■	
ACTOR B							■		
ACTOR C	■								
PLAYER A								■	
PLAYER B		■							
PLAYER C							■		
TEAM A									■
TEAM B	■								
•					•				
•					•				
•					•				

FIG. 2

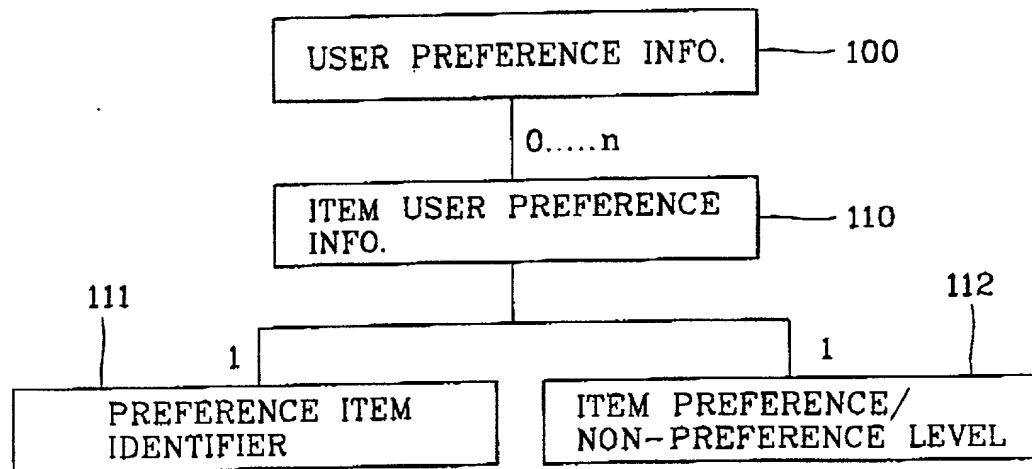


FIG. 3

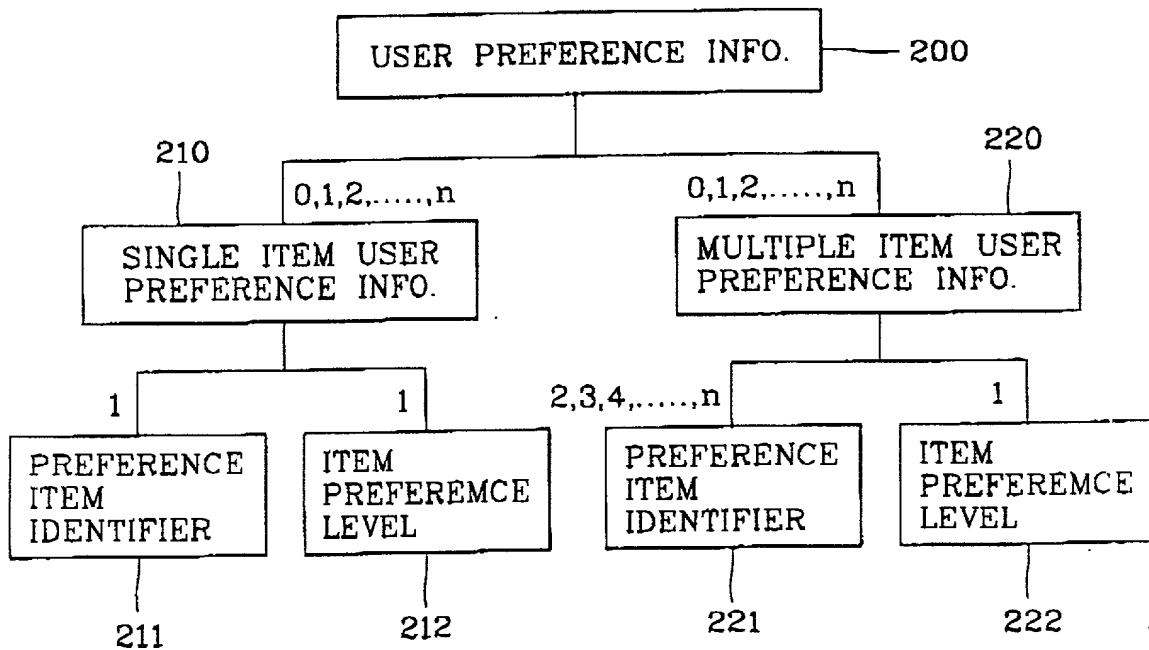
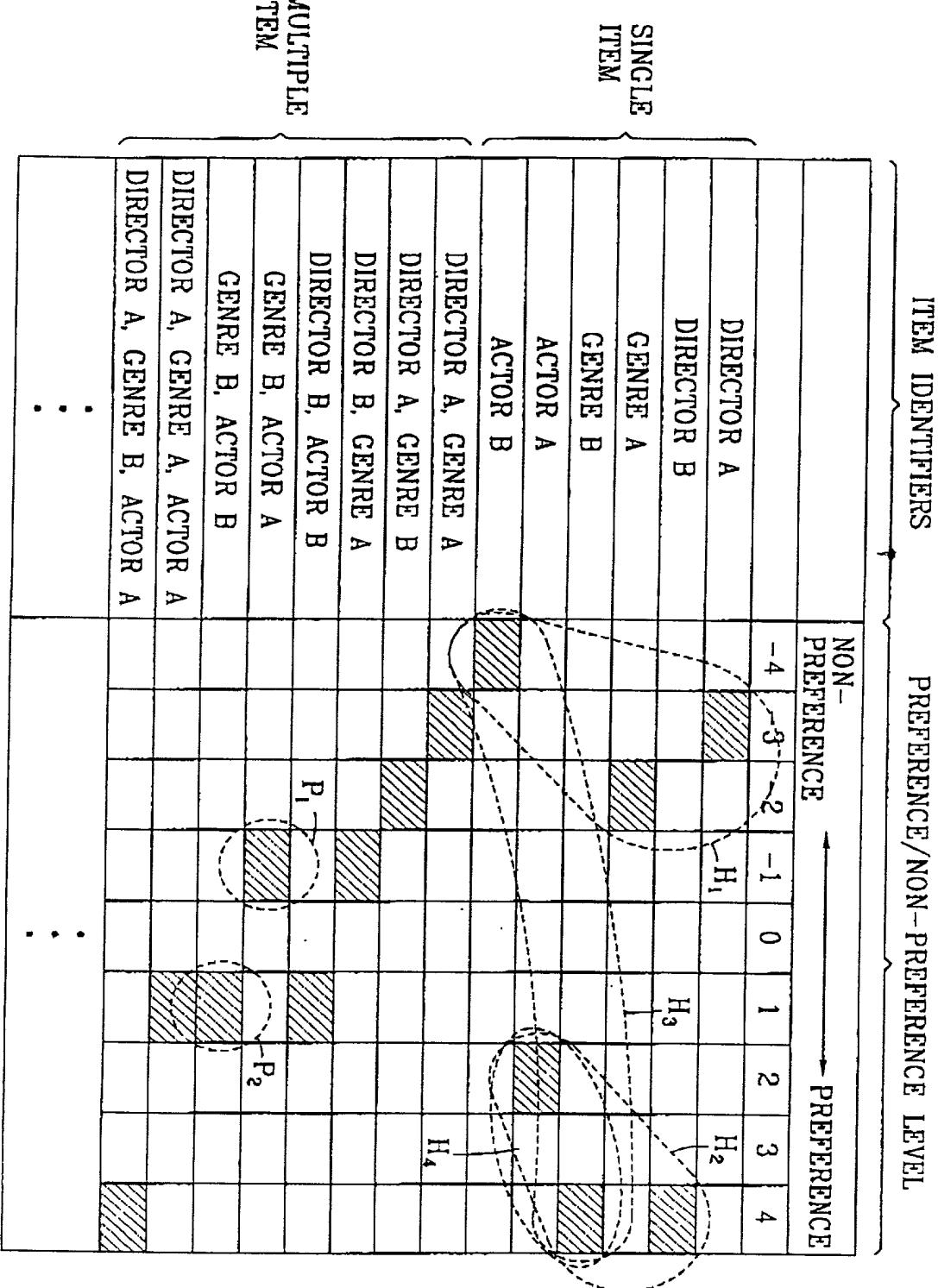


FIG. 4



Docket No.: \_\_\_\_\_

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

My residence, post office and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter claimed and for which a patent is sought on the invention entitled **MULTIPLE ITEM USER PREFERENCE INFORMATION DATA STRUCTURE AND METHOD FOR PROVIDING MULTI-MEDIA INFORMATION** \_\_\_\_\_, the specification of which

is attached hereto  was filed on \_\_\_\_\_ as Application Serial No. \_\_\_\_\_ and was  amended on \_\_\_\_\_ (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is known to me to be material to patentability in accordance with Title 37, Code of Fed. Regulations, Section 1.56(a).

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365 (b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed.

**Prior Foreign Application(s):**

<u>Number</u> 41192/1999	<u>Country</u> Korea	<u>Month/Day/Year</u> 09/22/1999
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I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.

Application Number(s): \_\_\_\_\_ Filing Date (Month/Day/Year)  
\_\_\_\_\_  
\_\_\_\_\_

I hereby claim the benefit under 35 U.S.C. 120 of any United States application(s), or 365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

Prior U. S. Application  
or PCT Patent Number  
(if applicable)

Filing Date (Month/Day/Year)

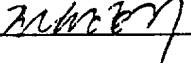
Parent Patent Num.

I hereby appoint the following attorney(s) and/or agent(s): Daniel Y.J. Kim, Registration No. 36,186 and Mark L. Fleshner, Registration No. 34,596; Carl R. Wesolowski, Registration No. 40,372, John C. Eisenhart, Registration No. 38,128, Rene A. Vazquez, Registration No. 38,647; Michael J. Cormelison, Registration No. 40,395; and Stuart I. Smith, Registration No. 42,159; and Carol L. Druzbick, Registration No. 40,287, all of

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with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, and all future correspondence should be addressed to them.

Full name of sole or first inventor: Sung Bae JUN

Inventor's signature: 

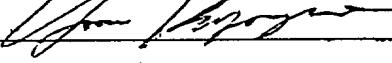
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Citizenship: Republic of Korea

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Full name of joint inventor(s):

Inventor's signature:

Date:

Residence:

Citizenship:

Post Office Address: